Practice Test 3
MAT0024

Evaluate:

1) $-3^2 = -3 \cdot 3 = \boxed{-9}$

exponent 2 → 3^2

Opposite value of the product ← $-$

base 3 ← 3

2) $(-2)^3 = (-2)(-2)(-2)$

exp. 3 → $(-2)^3$

base -2 ← (-2)

$= \boxed{-8}$

3) $2 \cdot x \cdot y^2$ for $x = 2$ and $y = -3$

$2 \cdot (2) \cdot (-3)^2$

$2 \cdot (2) \cdot (-3)(-3)$

$4 \cdot 9$

$\boxed{36}$

Simplify each expression. Write the answers without parentheses or negative exponents.

(4) $(5x^1y^4)^3 = 5^{1\cdot3}x^{1\cdot3}y^{4\cdot3}$

$= 5^3x^3y^{12}$

$= 5\cdot5\cdot5\cdot x^3y^{12}$

$= \boxed{125x^3y^{12}}$

(5) $(-3x)(8x^3) = (-3)(8)\cdot x^1\cdot x^3$

$= \boxed{-24x^4}$

(6) $(2x^4y^3)^0 = 1$ ← exponent

Base

* any base raised to a zero power equals 1.

(7) $\left(\frac{3x^3}{2b^4}\right)^{-4} = \frac{3^{1\cdot-4}x^{3\cdot-4}}{2^{1\cdot-4}b^{4\cdot-4}} = \frac{3^{-4}x^{-12}}{2^{-4}b^{-16}}$

$= \frac{2^4b^{16}}{3^4x^{12}} = \boxed{\frac{16b^{16}}{81x^{12}}}$

(8) $\left(\frac{3a^5}{b^8}\right)^3 = \frac{3^{1\cdot 3}\, a^{5\cdot 3}}{b^{8\cdot 3}}$

$= \frac{3^3 a^{15}}{b^{24}}$

$= \boxed{\frac{27a^{15}}{b^{24}}}$

(9) $\frac{a^3}{a^{-12}} = a^{12} \cdot a^3 = a^{12+3} = \boxed{a^{15}}$

(10) $\frac{56x^4y^2}{7x^2y^9} = 8x^{4-2}y^{2-9}$

$= 8x^2y^{-7}$

$= \boxed{\frac{8x^2}{y^7}}$

(11) $\frac{x^3y^{-3}a^{-5}}{x^2y^{-4}} = \frac{x^3y^4}{x^2y^3a^5}$

$= \frac{x^{3-2}y^{4-3}}{a^5}$

$= \boxed{\frac{xy}{a^5}}$

(12) $4x^5 - 3x^2$

→ binomial
→ degree 5
↳ highest exponent

(13) $(3x^2 + 7x - 5) + (-8x^2 - 2x + 4)$

addition

$-5x^2 + 5x - 1$

(14) $(-4x^2 - 3x + 1) - (12x^2 + 4x - 3)$

$-12x^2 - 4x + 3$

subtraction

$-16x^2 - 7x + 4$

(15) $3y^3(-4y^2 + 3y - 6)$

$-12y^5 + 9y^4 - 18y^3$

(16) $(5x - 2)(2x + 4)$ "FOIL"

$10x^2 + 20x - 4x - 8$

$10x^2 + 16x - 8$

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(17) $-2x^1(5x^2-6x^1+3) = \boxed{-10x^3}$

(18) $(a^1+5)(a^1-5) = a^2-5a+5a-25$

F O I L

$= a^2+0-25$

$= \boxed{a^2-25}$

(19) $(4x+2)^2 = (4x^1+2)(4x^1+2) =$

$= \boxed{1}$

* Poem:

$((4x)+(2))^2 = (4x)^2$

F L

You Square the first, $= \boxed{16x^2+}$

Square the last.

multiply them together.

double them for the last.

(20) $(y^1+5)(3y^2-8y^1+7) = 3y^3$

$= \boxed{3y^3}$

(22) $(2x^2+3x-14) \div (x-2)$

$2x+7$

$x-2 \;\big|\; 2x^2+3x-14$

$-2x^2+4x$

$0+7x-14$

must add up to zero!

$-7x+14$

$0+0$

no remainder

Answer: $2x+7$

① $\frac{2x^2}{x} = 2x$ divid

② $2x(x-2)$ divi

$2x^2-4x$

③ change signs opposite,

④ Add and bring down next term

⑤ $\frac{7x}{x} = 7$ di

⑥ $7(x-2)$ mu

$7x-14$

⑦ $-7x+14$ cha

(23) $\frac{3r^2+11r+7}{r+5}$

$3r-4$

$r+5 \;\big|\; 3r^2+11r+7$

$-3r^2+15r$

① $\frac{3r^2}{r} = 3r$ di

② $3r(r+5)$ mu

$3r^2+15r$